



**EDICT**



# **OF GOVERNMENT**

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.

EAS 238 (2001) (English): Textile materials – Tests for colour fastness – Colour fastness to perspiration



BLANK PAGE





**EAS 238:2001**

**ICS 59.080.01**

**HS 5000**

**HS 5100**

**HS 5200**

**HS 5300**

**HS 5400 to HS 6700**

## **EAST AFRICAN STANDARD**

---

**Textile materials — Tests for colour fastness — Colour fastness to perspiration**

EAST AFRICAN COMMUNITY

---



## Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Partner States in the Community through their National Bureaux of Standards, have established an East African Standards Committee.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

© East African Community 2001 — All rights reserved\*

East African Community

P O Box 1096

**Arusha**

Tanzania

Tel: 255 27 2504253/8

Fax: 255-27-2504481/2504255

E-Mail: [eac@eachq.org](mailto:eac@eachq.org)

Web: [www.each.int](http://www.each.int)

---

\*

© 2001 EAC — All rights of exploitation in any form and by any means reserved worldwide for EAC Partner States' NSBs.

## **Introduction**

Colourfastness of textile materials is of great importance to the consumer. The fastness depends not only upon the nature and depth of the shade of the dyestuff used but also upon the nature of the fibre and the exact method of dyeing or printing employed. When the same dyestuff is used in dyeing or printing different fibres or applied by different methods upon the same fibre, it may give vastly different results.

The test method prescribed in this standard is intended for evaluating colourfastness of textile materials to human perspiration.

In the preparation of this standard reference was made to ISO 105-E04, *Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration*

Acknowledgement is made for the assistance derived from this source.





## Textile materials — Tests for colour fastness — Colour fastness to perspiration

### 1 Scope

This East African standard prescribes a method for determination of colourfastness of textile materials of all kinds and in all forms to the action of human perspiration.

### 2 Principle

Specimens of the textile in contact with adjacent fabrics are treated in two different solutions containing histidine, and placed between two plates under a specified pressure in a testing device (see Note 1). The specimen and the adjacent fabrics are dried separately. The change in colour of each specimen and the staining of the adjacent fabrics are assessed with grey scales.

### 3 Apparatus and reagents

**3.1 Testing device** — Consisting of a frame of stainless steel into which a weighed-piece of mass 5kg and a base of 11.5 cm x 6 cm is closely fitted, with glass or acrylic resin plates of the same size and 0.15 cm thickness. In this case the size of the composite specimen must be 10 cm x 4 cm (see Notes 1 and 2)

NOTE 1 Suitable testing devices are the Hydrotest, the perspiration Tester and the perspirometer. If dimensions of the composite specimen differ from the size of 10 cm x 4 cm, an equivalent mass should be used, so that the pressure of 12.4kpa on the specimen remains the same.

NOTE 2 Other devices may be used provided that the same results are obtained.

**3.3 Oven** – Maintained at  $37 \pm 2$  °C

**3.3 Alkaline solution** — freshly prepared, containing, per litre.

0.5 g of 1- histidine monohydrochloride monohydrate. ( $C_6H_9O_2N_3HCl \cdot H_2O$ )

5g of sodium chloride (NaCl);

2.5 of disodium hydrogen orthophosphate dihydrate ( $Na_2HPO_4 \cdot 2H_2O$ )

This solution is brought to pH 8 with 0.1 N Sodium hydroxide solution

**3.4 Acid Solution** — Freshly prepared, containing, per litre:

0.5 g 1-histidine monohydrochloride monohydrate ( $C_6H_9O_2N_3HCl \cdot H_2O$ )

5 g of sodium chloride (NaCl);

2.2 of sodium dihydrogen orthophosphate dihydrate ( $NaH_2PO_4 \cdot 2H_2O$ )

The solution is brought to pH 5.5 with 0.1 N sodium hydroxide solution.

**3.5 Two adjacent fabrics** — Each measuring 10 cm x 4 cm, one piece made of the same kind of fibre as that of the textile to be tested or that predominating in the case of blends, the second piece made of the fibre as indicated in the table below or in the case of blends, of the kind of fibre second in order of predominance, or as otherwise specified.

If the first piece is:	The second piece should be:
Cotton	wool
Wool	cotton
Silk	Cotton
Linen	wool
Viscose	wool
Acetate	Viscose
Polyamide	wool or viscose
Polyester	Wool or Cotton
Acrylic	Wool or cotton

**3.6** Grey scales for assessing change in colour and staining<sup>\*</sup>.

## 4 Test specimen

**4.1** If the textile to be tested is fabric, place a specimen 10 cm x 4 cm between the two adjacent fabrics (3.5) and sew along one of the shorter sides to form a composite specimen. Two such composite specimens are required.

**4.2** If the textile to be tested is fabric, place a specimen 10 cm x 4 cm between the two adjacent fabrics (3.5) and sew along one of the shorter sides to form a composite specimen. Two such composite specimens are required.

**4.3** If the textile to be tested is loose fibre, comb and compress an amount approximately equal to half the combined mass of the adjacent fabrics (3.5), into a sheet 10cm x 4 cm. Place the sheet between the two adjacent fabrics and sew along all four sides to hold the fibers in place and to form a composite specimen. Two such composite specimens are required

## 5 Procedure

**5.1** Thoroughly wet one composite specimen in each of the solution (3.3 and 3.4) at a liquor ratio of 50:1, and allow them to remain in the solutions at room temperature for 30 minutes. Press and move them from time to time to ensure good and uniform penetration of liquor. Pour off the solutions and wipe the excess liquor off the specimens between two glass or acrylic resin plates measuring 11.5 cm x 6 cm under a force of about 50 N. Use separate apparatus for the alkaline and acid test.

**5.2** Place both sets of apparatus containing a composite specimen in the oven for 4h at 37 ±2 °C.

**5.3** Open out the composite specimen by breaking the stitching on all sides of the shorter sides and dry it by hanging it in air at a temperature not exceeding 60 °C with the three parts in contact only at the remaining line of stitching.

**5.4** Assess the change in colour of each specimen and staining of the adjacent fabrics with the grey scales.

## 6 Test report

For each of the solutions specified in 3.3 and 3.4 report the numerical rating of the change in colour of the test specimen and for the staining of each kind of adjacent fabric used in accordance with ISO 105-A02 and ISO 105-A03.

---

<sup>\*</sup> Standards referred to are listed at the back page of this standard.

**Referenced standards**

ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

ISO 105-A03, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining*



